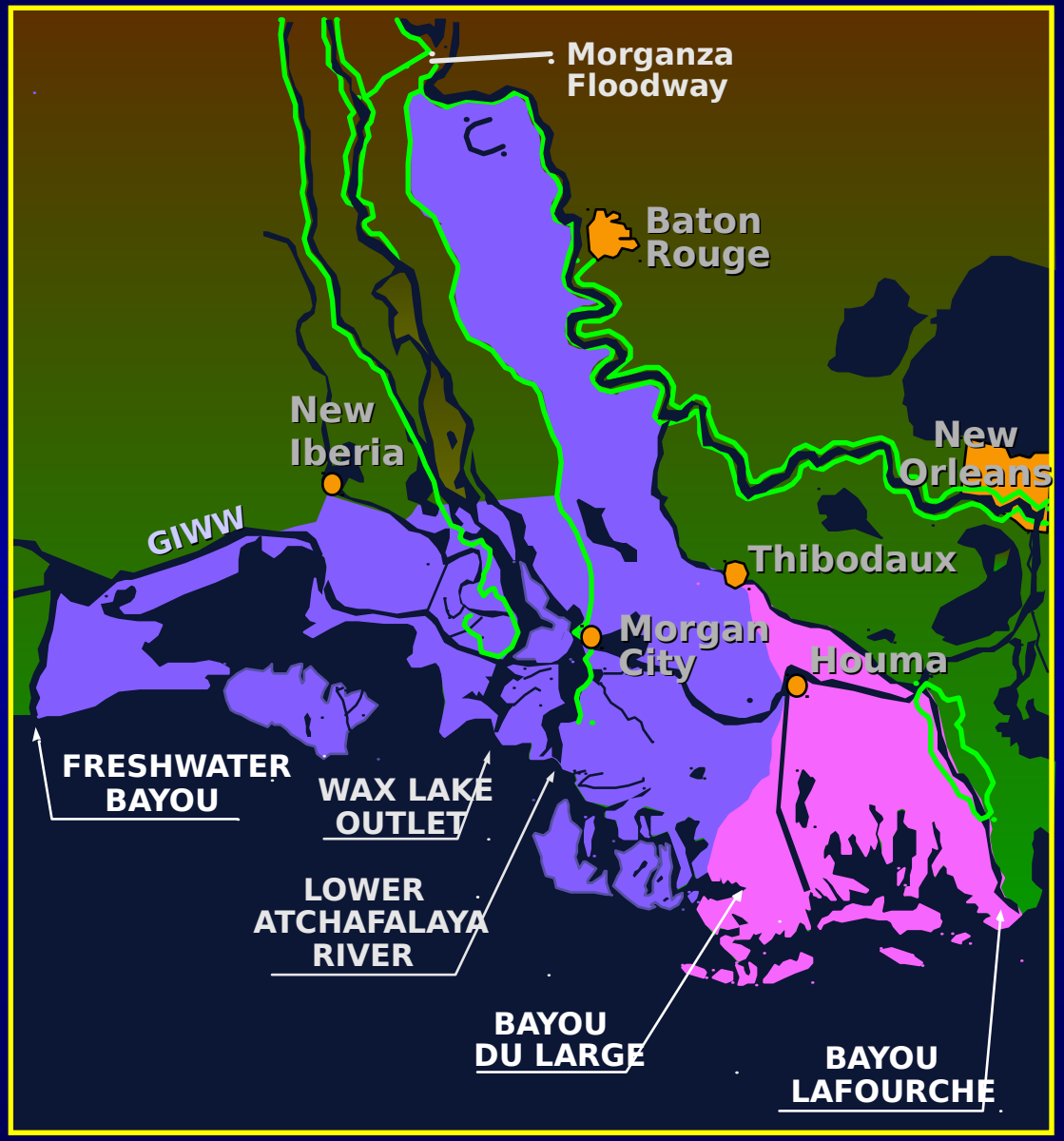
Morganza to the Gulf Flood Control Project

Presented by:
Bill Maloz-USACE Project Manager

Study Area



Lower Atchafalaya Basin Reevaluation Study Area

Morganza, LA to the Gulf of Mexico Study Area

Project Purpose

- Reduce flood damages in Terrebonne and Lafourche Parishes
- Reduce coastal wetlands loss
- Minimize adverse impacts on navigation and industry

Terrebonne Parish following Hurricane Andrew

Background

- 1992 - initiated reconnaissance study covering larger area
- 1994 - report recommended further federal action
- 1995 – initiated two studies
  - Lower Atchafalaya Re-Evaluation
  - Morganza to the Gulf

Residential development in the study are

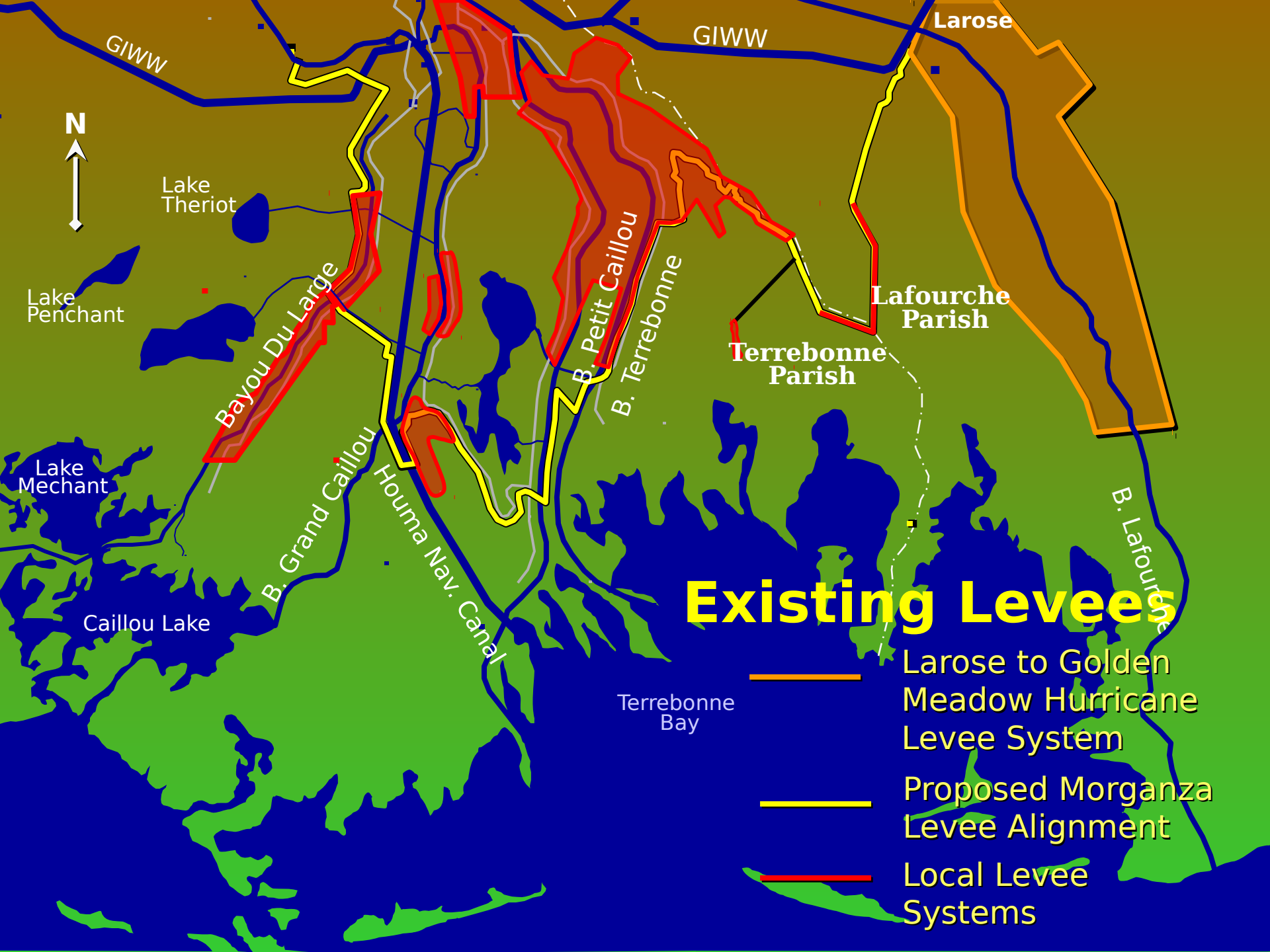
Study Participants

Terrebonne Parish flooding following Hurricane Andrew

- Local interests: Terrebonne Levee & Conservation District
- Local sponsor: LADOTD
- The study team consisted of:
  - –USACE
  - –LADOTD
  - –TLCD
  - –Habitat Evaluation Team (HET)
    - •USFWS, NOAA Fisheries, LWFS, NRCS, EPA, LDNR

Problem Identification

- Hurricane Surge Flooding
  - Tropical Storm Bill $55 million in damages ('03)
  - Hurricane LiLi: $122 million in damages ('02)
  - Hurricane Andrew: $55 million in damages
  - Hurricane Juan: $112 million in damages
  - Annual tropical events cause significant damage
- Deteriorating Wetlands
  - Wetlands can buffer hurricane surge
  - Salinity intrusion from the Houma Navigation Canal and other area bayous
  - Subsidence and lack of nutrients from Mississippi River


GIWW
GIWW
Larose
N
Lake
Theriot
Lake
Penchant
Bayou Du Large
B. Petit Caillou
B. Terrebonne
Lafourche
Parish
Terrebonne
Parish
Lake
Mechant
B. Grand Caillou
Houma Nav. Canal
B. Lafourche
Caillou Lake
Terrebonne
Bay
Existing Levees
Larose to Golden
Meadow Hurricane
Levee System
Proposed Morganza
Levee Alignment
Local Levee
Systems

Environmental Conditions

- Wetland habitat ranges from freshwater marsh near the GIWW to brackish marsh around Lake Boudreaux to salt marsh near the Gulf of Mexico
- In Terrebonne Parish,
  - Land was lost from 1956-78 at a rate of .79% per year
  - From 1978-90, the rate increased to 1.2 %
  - It is predicted that 93,792 acres or 34.5% of the remaining wetlands will be lost in 50 years without any action to protect them

Minimize Impacts to Indust

- Houma manufactures oil drilling platforms for international operations
- Deep water drilling
  - fastest growing industry segment
  - results in larger structures

Deep water drill rig assembled in Houma

Feasibility Analysis

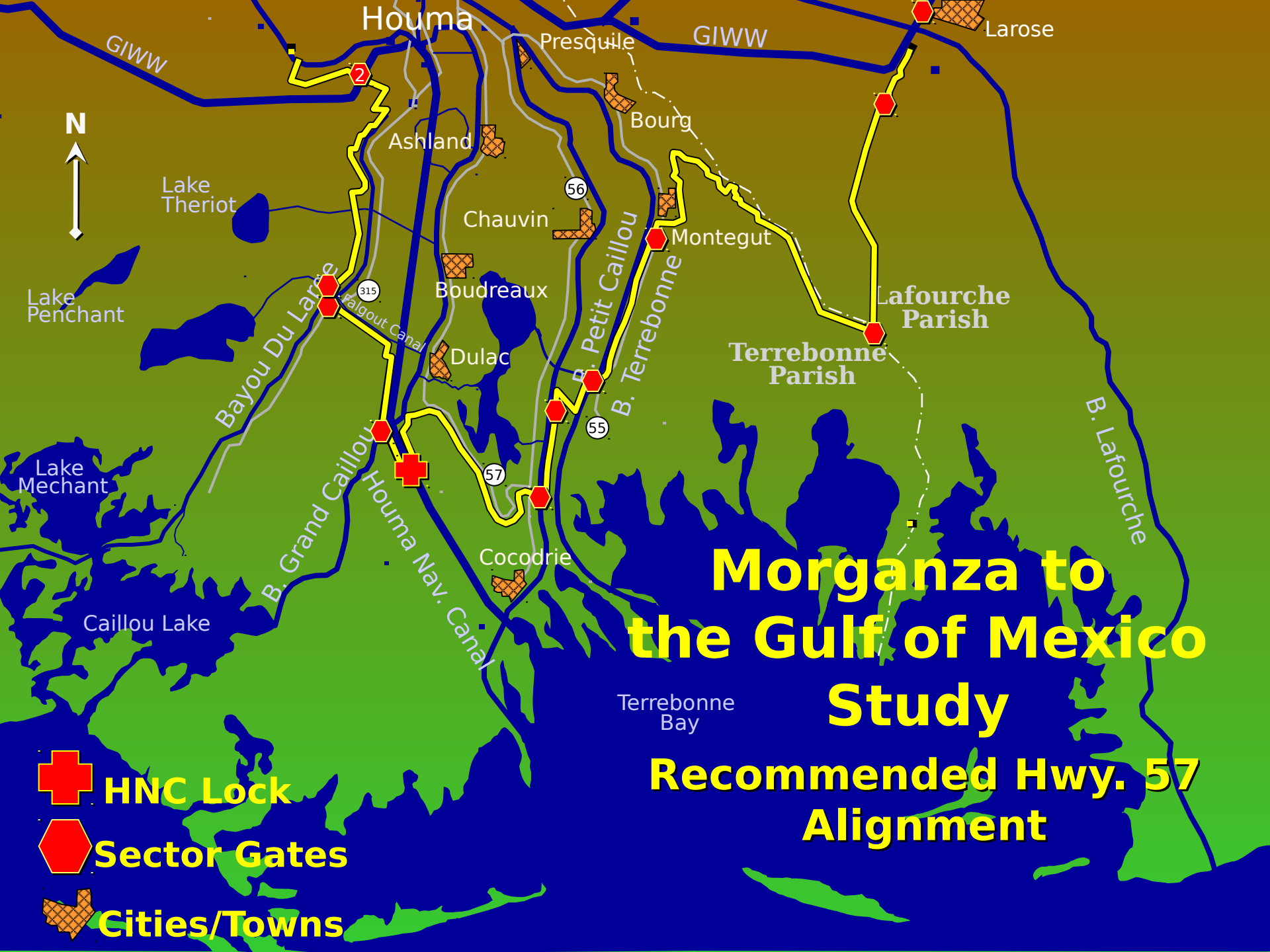
- In feasibility the team considered the economic and environmental aspects of several alternatives, such as:
  - Ring levees for individual communities
  - Relocation of residents below the GIWW
  - Elevation of structures below the GIWW
  - Several comprehensive levee alignments
    - Proposed levee alignments followed existing levees and the wet-non-wetland interface as much as possible

Feasibility Level of Detail

- The cost to comply with WRDA 86 exceeded $15 million and the sponsor was unwilling to take that risk
- Pre-1986 level of detail was approved in the May 1995 Reconnaissance Review Conference with HQ
- HQ indicated that “it was hardly ever possible to guarantee feasibility cost estimates without substantial contingencies and recommended the district employ risk analysis”

Feasibility Level of Detail

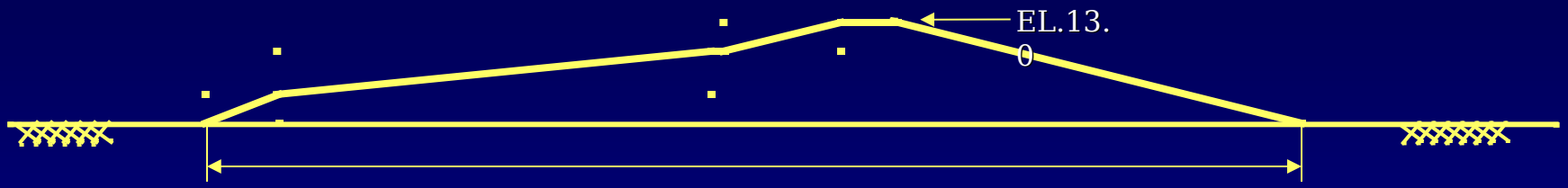
- Minimal field data was obtained during feasibility
- Existing surveys and borings were obtained from local firms to supplement Corps data
- Designers assessed the risk inherent with the data available and through the use of conservative assumptions and appropriate contingency values developed a feasibility design
- Experience with work in similar conditions was a factor in developing design and cost estimates


Houma
GIWW
GIWW
Presquile
Larose
Bourg
Ashland
Lake
Theriot
Chauvin
Montegut
Lake
Penchant
Boudreaux
Bayou Du Large
Falgout Canal
Dulac
B. Petit Caillou
B. Terrebonne
Lafourche
Parish
Terrebonne
Parish
B. Lafourche
Lake
Mechant
B. Grand Caillou
Houma Nav. Canal
Cocodrie
Caillou Lake
Terrebonne
Bay
N
2
315
56
55
57
Morganza to
the Gulf of Mexico
Study
Recommended Hwy. 57
Alignment
HNC Lock
Sector Gates
Cities/Towns

Morganza to the Gulf Selected Plan

- 72 miles of earthen levee
- 12 sector gate structures for flood control
- 12 environmental structures
- Houma Navigation Canal Lock
- Cost-sharing 65%-35% with State of Louisiana
  - Non-Fed share = $259,000,000
  - Federal share = $481,000,000
- First levee lift requires 8 yrs to construct
- Total construction duration: 16 years

Proposed Levee Construction

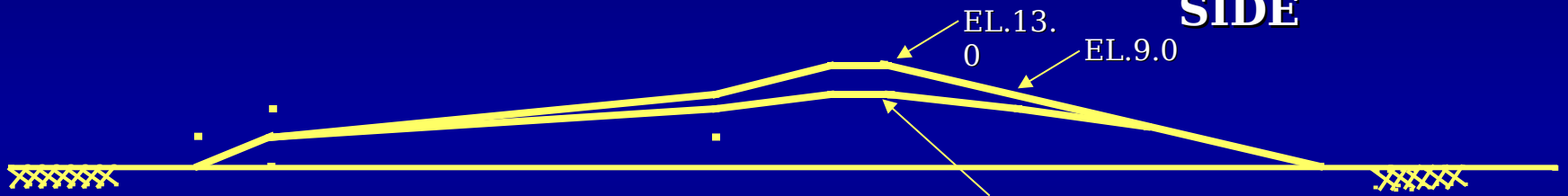


190’

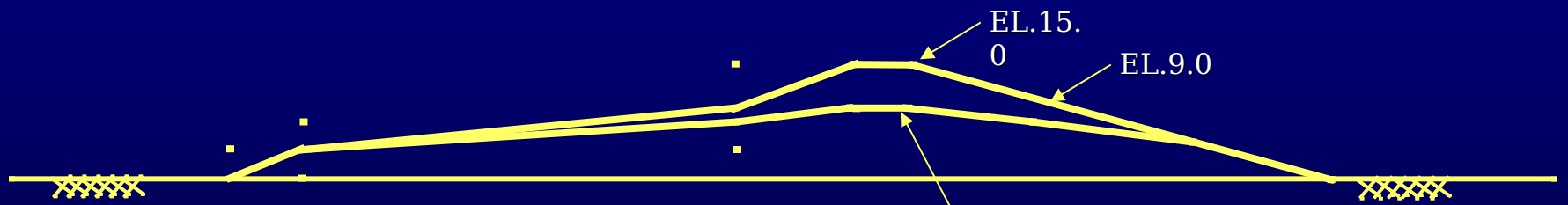
TYPICAL DESIGN
SECTION I

FLOOD SIDE

PROTECTED SIDE



4 YEARS AFTER
CONSTRUCTION



6 YEARS AFTER SECOND
LIFT

Estimated Project Costs
($ millions)

• Levees and Floodwalls	$ 218
• Flood Gates	$ 185
• Houma Nav. Canal Lock	$ 97
• Environmental Structures	$ 58
• Real Estate Acquisition	$ 10
• Relocation of Facilities	$ 63
• Mitigation	$ 49
Estimated Total First Cost	$680 M

* Feasibility Cost Oct 2000

Project Benefits

Category	100 – Year Level of Protection
Structures and Contents	65,650,446
Other Benefits	7,078,900
Safe Harbor Benefits	1,153,000
Agricultural	1,302,800
Crawfish Farming	170,316
Water Supply	193,895
Benefits During Construction	1,675,274
Total Equivalent Annual Benefits	**77,225**
Equivalent Annual Cost	**53,924**
B/C Ratio	**1.43**
Equivalent Annual Net Benefit	**23,301**

* Feasibility Cost Oct 2000

Annual Benefits Summary – Highway 57

Alignment	NED Benefit Category	Level of Protection			
		50-year	85-year	100-year	500-year
Highway 57 (with lock)	Inundation Reduction:				
	Structures and Contents *	62,598,389	63,973,494	65,650,446	73,977,792
	Other Benefits**	5,818,815	5,948,722	7,078,900	7,541,990
	Safe Harbor Benefits***	980,000	1,072,000	1,153,000	1,254,000
	Agriculture	1,302,500	1,302,700	1,302,800	1,303,100
	Crawfish Farming	164,491	166,794	170,316	171,454
	Water Supply	193,895	193,895	193,895	N/a
	Benefits During	1,392,385	1,608,644	1,675,274	N/a

* Feasibility Cost Oct 2000

Project Impacts

- The HET agreed to use the Wetland Value Assessment (WVA) model
- Wetland acres lost is measured in Average Annual Habitat Unit's (AAHU's) and would be mitigated using comparable AAHU values based upon habitat type
- Ecosystem Impacts
  - Intermediate marsh and swamp would improve
  - Fresh, brackish and saline marsh would never completely recover from construction impacts
  - Proposed mitigation involves marsh creation in the study area and widening of Minors Canal to increase freshwater flow

Mitigation

- Involves creating new wetlands and improving the condition of existing wetlands
- The direct impacts are estimated to be 4,112 acres.
- Mitigation for impacts to fresh, brackish and saline marsh involves creating 1,352 acres and enlarging the Minor’s Canal

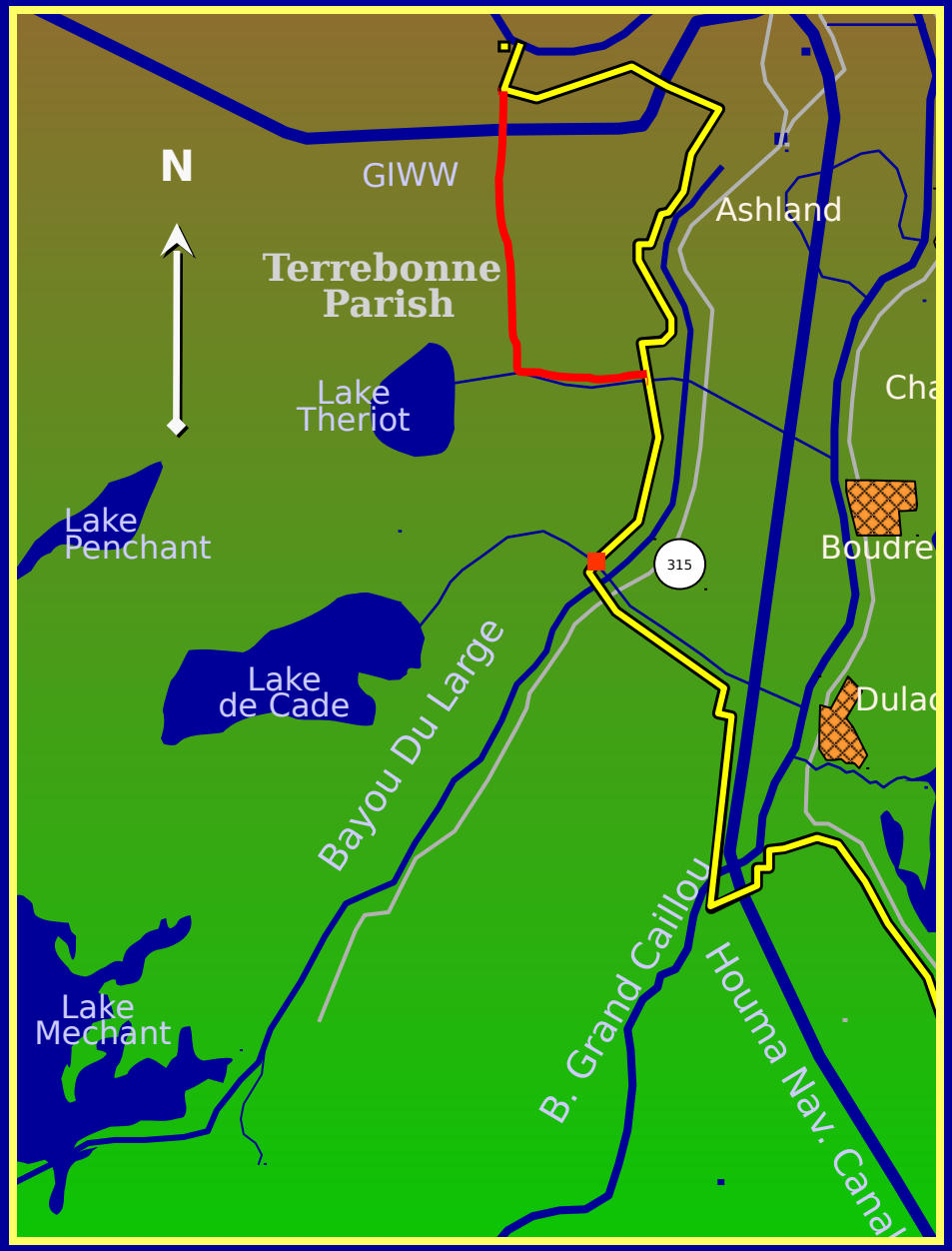
Public and Agency Comments

- Resource agencies primary concerns are
  - Full NEPA compliance, including mitigation
  - Operation of structures and management of freshwater to enhance wetlands inside and outside of the levee
  - Seek financial guarantees for adaptive management
- In PED, the Corps will
  - Prepare supplemental EA's or EIS's with an appropriate mitigation plan for each feature of work
  - Involve the agencies in developing a mutually agreeable operation plan for the system

USFWS Coordination

- “Consistent with the project purposes of hurricane and environmental protection, the project will be designed and operated to achieve coastal wetland conservation through the improved distribution of freshwater inflows to wetlands wherever feasible (i.e, in a manner that does not compromise hurricane protection, minimizes impacts to navigation and aquatic resources, and does not induce flooding). Toward that end, the Corps of Engineers will formulate specific designs and operating plans in consultation with the interagency Habitat Evaluation Team”

Upper Dularge



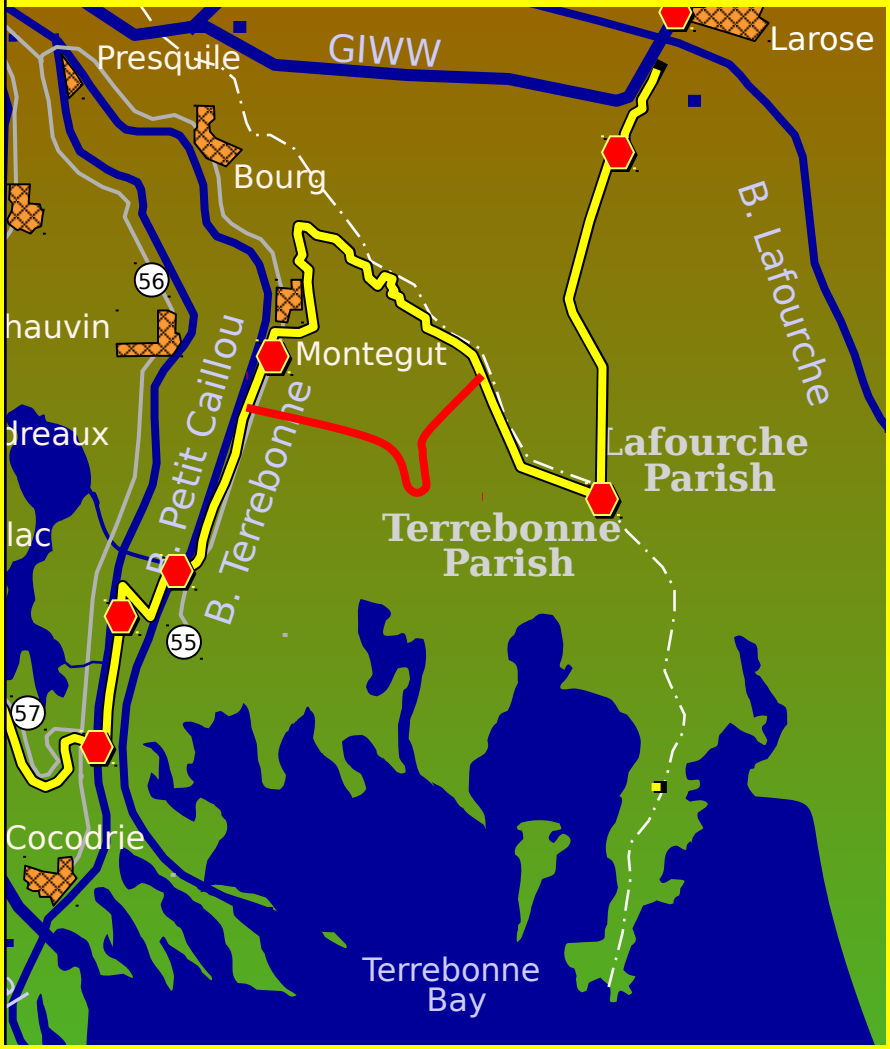
- Several landowners expressed concern
  - Property being severed by levees
  - Rainfall runoff may be intercepted by levees
- In PED, the Corps will
  - Evaluate in more detail, the Federal proposal and the local proposal for potential cost savings, intercepted drainage and environmental impacts

Proposed Federal Levee Alignment

Landowners Proposed

Public Comments

- Isle de Jean Charles ("the island") not included
  - Excluded from levee system due to cost of levee (~$100 M)
  - Isle de Jean Charles community is located on the island
  - Approximately 60 residential structures
  - Relocation of structures is economically justified
  - Parish is constructing a ring levee at +7.0' NGVD on the island



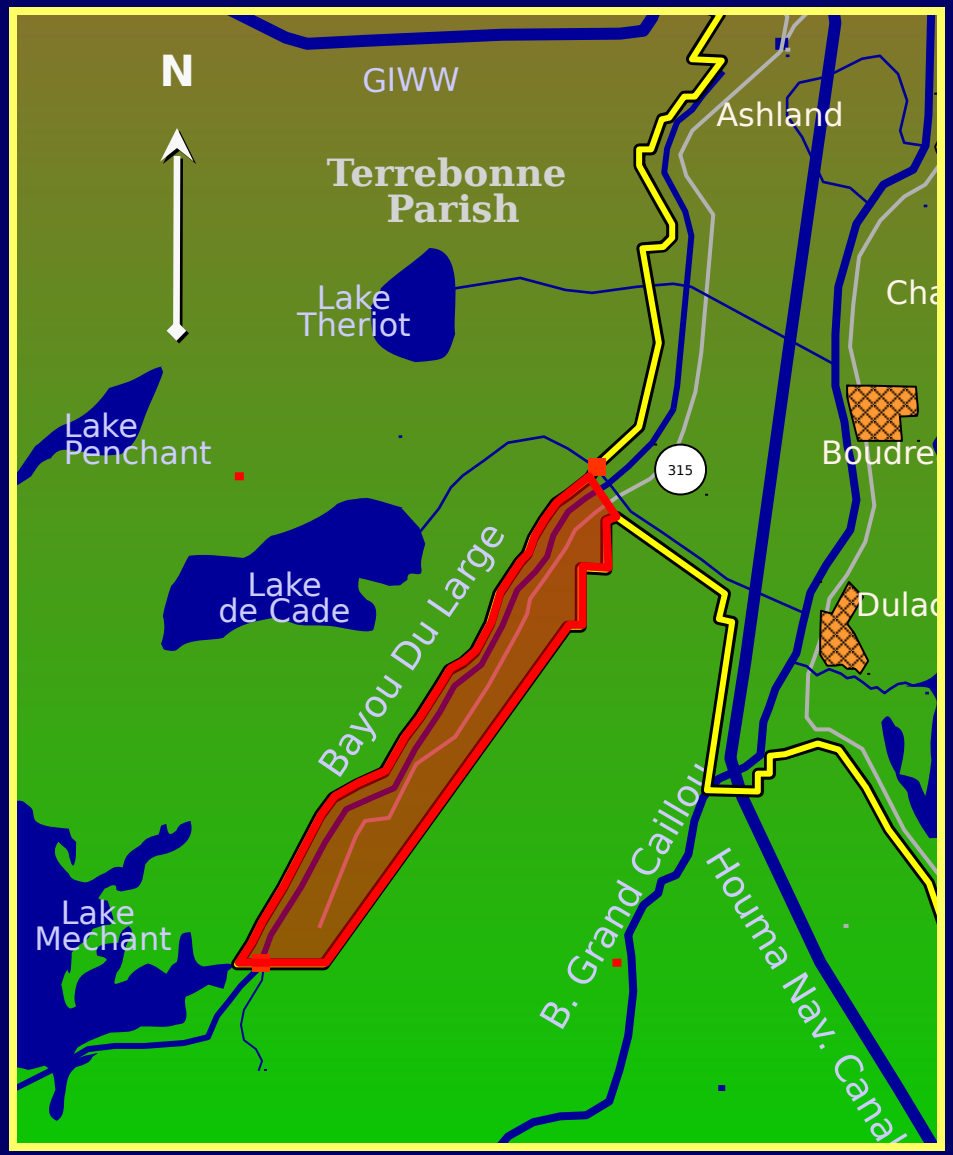
Proposed Federal Levee Alignment

Locals Proposed Alignment

Sector Gates

Cities/Towns

Lower Bayou Du Large



- Excluded from levee system due to costs
- Approx. 250 structures
- Relocation not justified
- Parish will soon complete a ring levee along Lower du Large at elev. +7.0’ NGVD
- DOTD and the Parish plan to use non-Fed funds to upgrade the Lower du Large levee and tie into the Federal project

Milestone Schedule

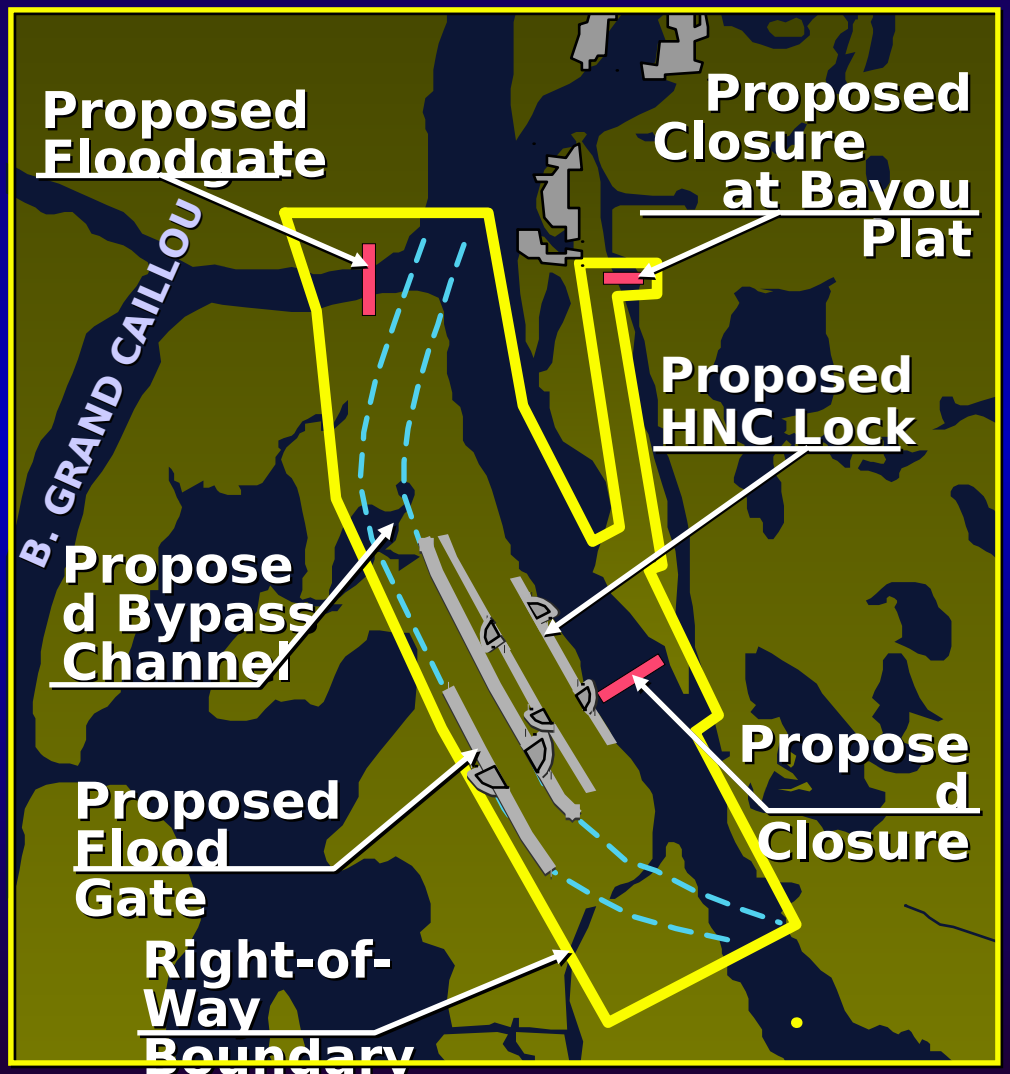
• Dist Engr Submits Final Report to MRC and Draft MRC Report to MRC/HQUSACE	14 Mar 02
• MRC Secretary Issues Public Notice and CECW-AR Initiates 30-day review	20 Mar 02
• MRC Staff/District respond to Policy Review	19 Apr 02
• Final Report and draft MRC Report presented to /sign by MRC	23 Apr 02
• Division Engineer's Notice/MRC Report	23 Apr 02
• Chief's Report	Aug 02

SCHEDULE
(thru 2006)

Effort	Initial Design & EA/EIS	Construction Phase
Reach J1	Sep 03 - Dec 04	Dec 04
Reach J2	May 04 - Jul 05	Aug 05
Pointe-aux-Chenes FG	Aug 04 – Dec 05	Mar 06
Reach H3	Sep 04 – Mar 05	Sep 05
HNC Lock Complex	Oct 02 – Jun 06	Aug 06

PROJECT CONSTRUCTION: Pending Congressional authorization, NEPA compliance, PCA execution and future appropriations.

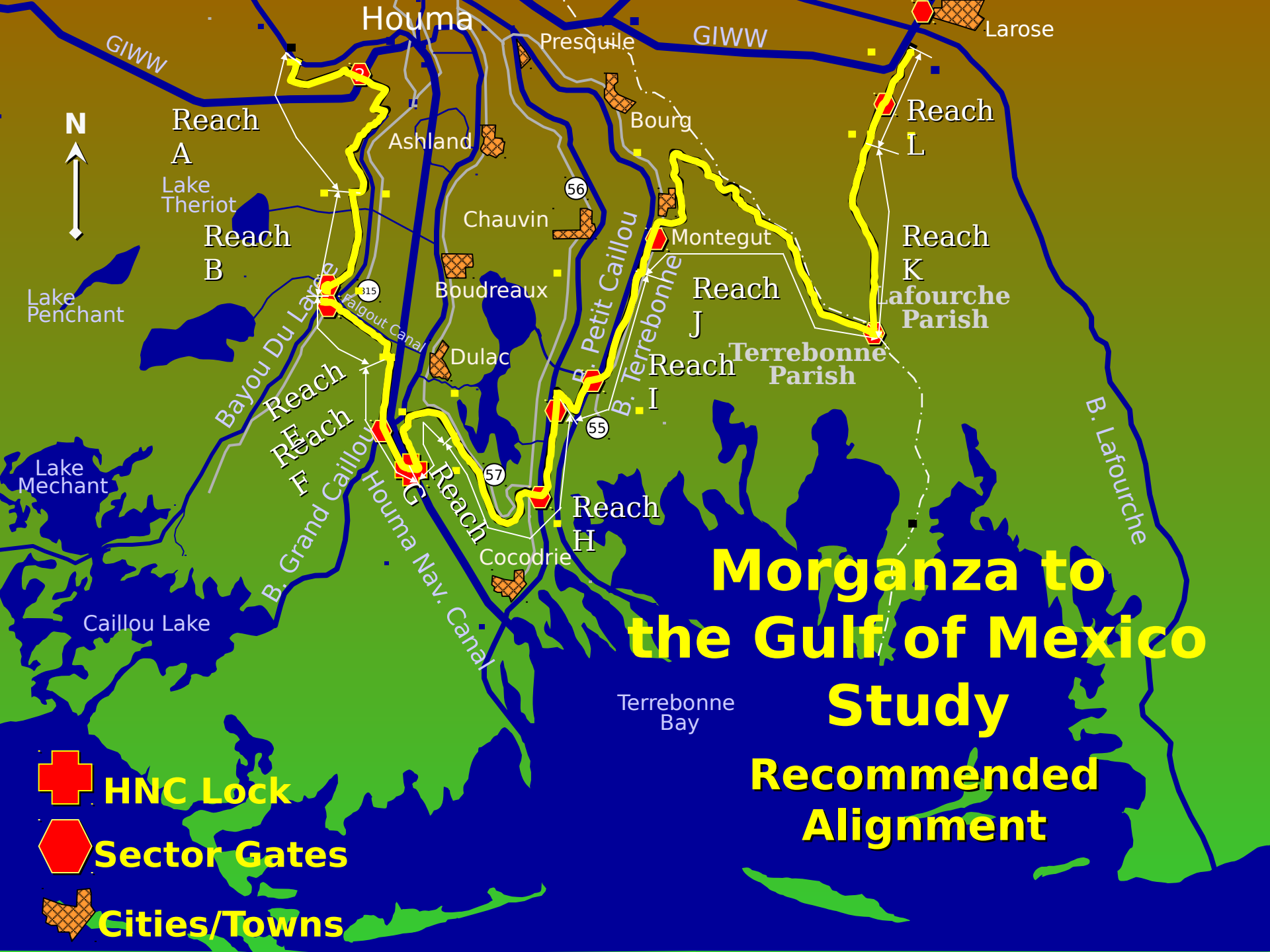
Proposed Houma Navigation Canal Lock Complex



- Provides flood control, salinity control and prolonged navigation opportunities
- Congress authorized advanced PED
- Detailed PED analysis resulted in a 110’ x 800’ lock and 200’ adjacent floodgate that will remain open most of the time

Project PED

- Following the MRC Report/Division Engineers Notice, NOD executed a Design Cost-share Agreement with LADOTD
- NOD initiated data collection for PED
- 1st construction contract scheduled to be awarded in early FY2005
- Terrebonne Parish began collecting ¼ - cent sales tax for the Project


Houma
GIWW
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Reach A
Lake Theriot
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Reach B
Montegut
Reach K
Lake Penchant
Boudreaux
Reach J
Lafourche Parish
Bayou Du Large
Falgout Canal
Dulac
B. Petit Caillou
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U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS
DISTRICT
SERVING THE ARMY...SERVING THE NATION